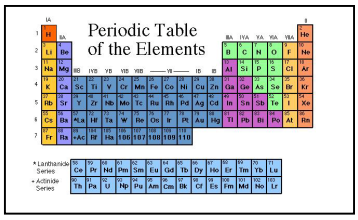


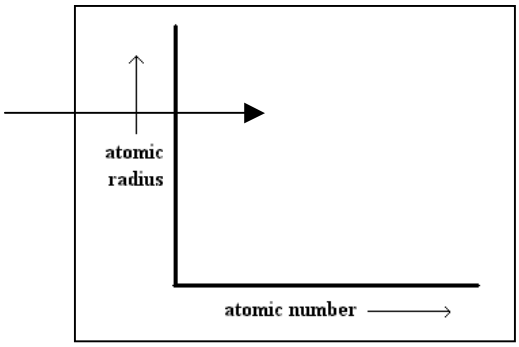
Activity # 11

Title: Graphing Trends in the Periodic Table-TEACHER'S ANSWER SHEET

1. Prediction: The sizes (atomic radii) of atoms will (increase, decrease, remain the same) Answers will vary as one goes right-to-left across a period.

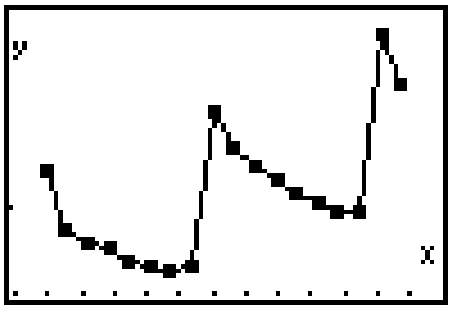
2.

Predicted sketches will vary.



EXPECTED appearance of graph (across a period)

3.



ACTUAL appearance of graph (across a period)

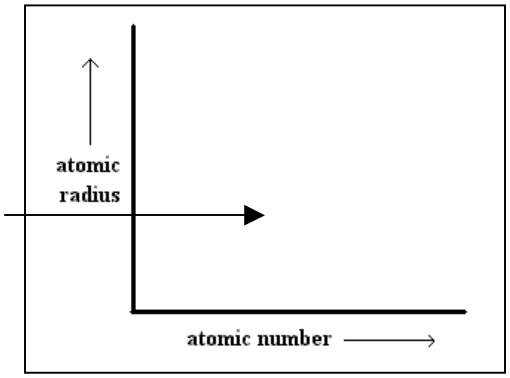
4. Similarities: Answers will vary depending upon predicted graph.
Differences: Answers will vary depending upon predicted graph.

5. As one goes right-to-left across a period, the sizes of atoms (increased, decreased, remained the same) decreased.

6. (Explanation) Additional protons added to successive atoms increases the positive charge on the nucleus. (Adding nuclear particles does not enlarge the atom as it is mostly empty space between the nucleus and the electron energy levels) This increased positive charge attracts the negatively-charged electrons with a greater force,thereby drawing them in closer to the nucleus. Note also that there is a sudden large increase in atomic size between elements 10 & 11 and again between elements 18 & 19. This is due to the fact that one drops down to the next period in each case where an additional energy level is added to the atom under consideration.

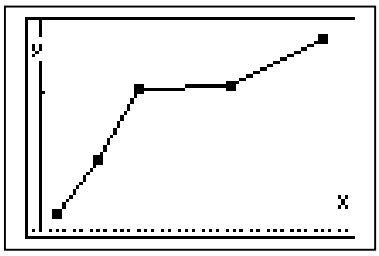
7. Prediction: The sizes of atoms will Answers will vary. as one goes down a group (family).

8. Predicted sketches will vary.

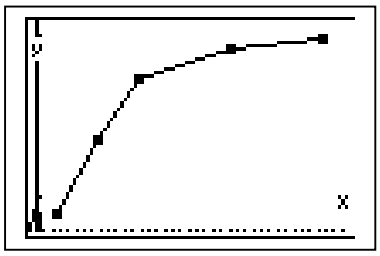


EXPECTED appearance of graph (down a group)

9.



Group IA



Group IIA

ACTUAL appearances of graphs (down groups)

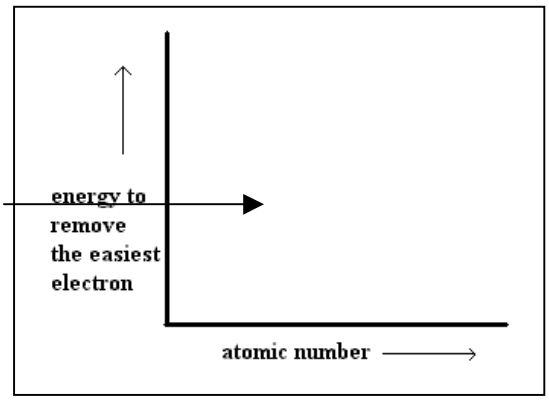
10. Similarities: Answers will vary depending upon predicted graph.
Differences: Answers will vary depending upon predicted graph.

11. As one goes down a group, the sizes of atoms increased.

12. (Explanation) Each time one drops down to the next element below it in a group, a new outer energy level is added. This necessarily will increase the diameter (and, of course, the radius as well) of the atom.

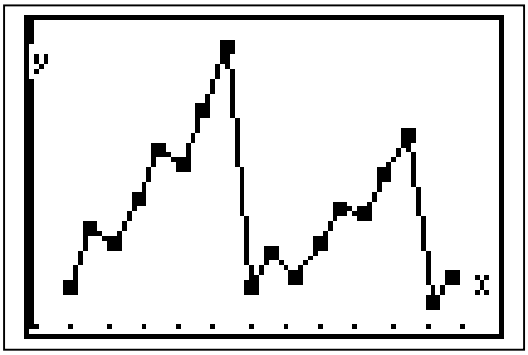
13. Prediction: The energy to remove the easiest electrons will Answers will vary. as one goes left-to-right across a period.

14. Predicted sketches will vary.



EXPECTED appearance of graph (across a period)

15.



ACTUAL appearance of graph (across a period)

16. Similarities: _____
_____

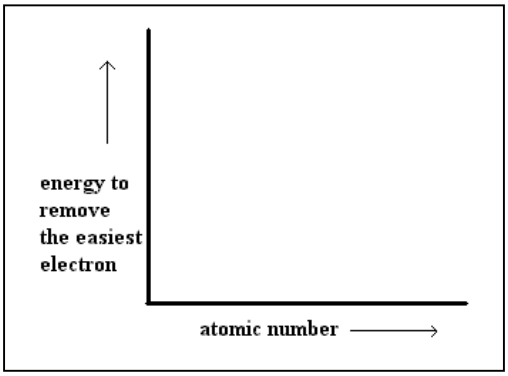
Differences: _____
_____

17. As one goes across a period, the energy to remove the easiest electron _____.

18. (Explanation)_____
_____
_____.

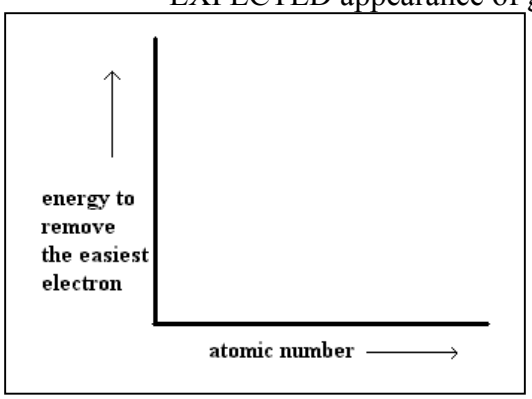
19. Prediction: The energy to remove the easiest electrons will _____ as one goes down a group.

20.



EXPECTED appearance of graph (down a group)

21.



ACTUAL appearance of graph (down a group)

22. Similarities: _____
_____
Differences: _____
_____

23. As one goes down a group, the energy to remove the easiest electron _____.

24. (Explanation)_____
_____
_____.

25. _____

26. _____
_____